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APPLICATION

Of

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For

UNITED STATES LETTERS PATENT

On

PORTABLE PUNCHING EXERCISE DEVICE

Docket No. DCD-42627
Sheets of Drawings: EIGHT

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PORTABLE PUNCHING EXERCISE DEVICE

RELATED APPLICATION

A claim to priority is made to the Provisional Patent Application filed January 16, 2003, under Serial No. 60/440,869.

BACKGROUND OF THE INVENTION

The present invention generally relates to free standing exercise devices, such as a punching bag. More particularly, the present invention relates to a portable punching exercise device.

Training equipment designed to receive impacts from the hands, arms or feet of the user for conditioning or training purposes are well-known. Such equipment is frequently used for training in boxing and the martial arts. In the past, such equipment was typically found in gymnasiums and exercise facilities. More recently, however, such equipment has also found its way into the homes of consumers.

Typically, such equipment includes a padded, relatively soft, upright striking pad designed to receive the impacts from the arms or legs of the user. The impact receiving equipment is anchored or otherwise fixed in place so that although the striking pad is permitted to deflect as a result of the impacts, it is designed to rebound in the direction of the user. Otherwise, the equipment remains substantially fixed in place relative to the ground or ceiling. Such equipment may typically either be very lively and responsive to practice dexterity, agility and speed, such as a vertically suspended punching bag, or relatively heavy and sluggish and intended to absorb significant energy impacts as a result of the power or strength of the user, such as a large punching bag.

An important consideration of such devices is durability. The devices must be designed to take a considerable amount of abuse from repeated

impacts without causing any deterioration of any resilient or energy absorbing members. Also, the padded portion of the device is typically deflected a certain angular amount from a normally vertically orientation. It is, therefore, also desirable that the space or perimeter about the base be controlled and limited to the amount that is needed while providing the user with flexibility and versatility to simulate practice against a live opponent.

In using such training bags, relatively high impact forces are initially absorbed by the striking pad and the resilient element is typically used to convert the kinetic energy from the user to potential energy. However, notwithstanding that the equipment absorbs a substantial amount of energy, it must remain fixed relative to the ground and therefore either be permanently anchored or sufficiently heavy to result in a considerable amount of friction with the floor surface. For serious or professional users, the magnitude of the forces of the impact necessitates that the device be permanently anchored to a ceiling, wall or floor, e.g. in gymnasiums. However, for most people acquiring such units for home use attaching such unit to a wall, ceiling or floor is not a realistic or practical option. Also, for those individuals who travel and do not have access to a gymnasium in order to train or practice, it is imperative that the punching exercise device be portable in nature.

Accordingly, there is a need for a punching exercise device which is portable. Such a device should be capable of being stored or transported in a relatively compact state, yet easily expanded to a training, in-use state. Such a punching exercise device should not require attachment to a wall, ceiling or floor. The present invention fulfills these needs and provides other related advantages.

SUMMARY OF THE INVENTION

An improved exercise device is provided for punching exercises. The device provides portability and is capable of being stored or transported in a relatively compact state, yet easily expanded to a training, in-use state. The device does not require attachment to a wall, ceiling or floor.

A portable punching exercise device includes a base and a plurality of legs attached to the base that are selectively pivotable between a first ground-engaging position and a second folded position. A padded punching bag is resiliently fixed to the base.

Each leg of the exercise device includes a telescoping extension selectively movable between a first retracted position and a second extended position. Each extension further includes a locking mechanism for holding the extension in either of the first or second positions and for releasing the extension for moving between the first and second positions. Each leg further includes a stabilizing foot. The stabilizing foot may be attached to the leg in a fixed position or the stabilizing foot may be pivotally attached to the leg.

A resilient support extends between the base and the punching bag. The resilient support includes a coiled spring. A post is attached to an upper portion of the resilient support such that the post supports the punching bag.

The punching bag includes an internal cavity, allowing the punching bag to telescopically accept the post therein.

The exercise device also includes a locking mechanism for holding the pivotal legs in either of the first or second positions and releasing the legs for moving between the first and second positions.

Other features and advantages of the invention will become more apparent from the following detailed description, taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings illustrate the invention. In such drawings:

FIGURE 1 is an orthogonal view of a portable punching exercise device embodying the present invention in its in-use state;

FIGURE 2 is a side elevational view of the exercise device of FIG. 1;

FIGURE 3 is a front elevational view of the exercise device of FIG. 1;

FIGURE 4 is a top plan view of the exercise device of FIG. 1;

FIGURE 5 is a bottom plan view of the exercise device of FIG. 1;

FIGURE 6 is a side elevational view of the exercise device of FIG. 1 in its storage/transport state;

FIGURE 7 is an exploded view of the exercise device of FIG. 1;

FIGURE 8 is a cross-sectional view of the punching bag and post of the exercise device of FIG. 1;

FIGURE 9 is a cross-sectional view of the resilient and dampening members of the exercise device of FIG. 1;

FIGURE 10 is a top plan view of the base bracket of the exercise device of FIG. 1;

FIGURE 11 is a side elevational view of the bracket of FIG. 10;

FIGURE 12 is a side elevational view of a hollow segment of a leg of the exercise device of FIG. 1;

FIGURE 13 is a cross-sectional view of a portion of the leg of FIG. 12;

FIGURES 14 and 15 are side elevational views of an extension of a leg of the exercise device of FIG. 1;

FIGURE 16 is an orthogonal top view of a stabilizing foot of the exercise device of FIG. 1;

FIGURE 17 is an orthogonal bottom view of the stabilizing foot of the exercise device of FIG. 1;

FIGURE 18 is an orthogonal bottom view of another embodiment of the base plate, legs and bracket of the portable punching exercise device of FIG. 1;

FIGURE 19 is a side elevational view of the base plate, legs and bracket of the portable punching exercise device of FIG. 18; and

FIGURE 20 is a cross-sectional side elevational view of the base plate, legs, and bracket of the portable punching exercise device of FIG. 18 taken along line 20-20 of FIG. 19.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

As shown in the accompanying for purposes of illustration, the present invention resides in a portable punching exercise device, generally referred to by the reference number 10. The exercise device 10, as will be more fully described herein, is designed to be moved between an extended in-use state, and a compact transporting and storing state. The exercise device 10 is durable to relatively high impact forces and provides the user with flexibility and versatility to simulate practice against a live opponent, or other training and practicing needs.

With reference now to FIGS. 1-5, the device 10 includes a base plate 12. A plurality, typically four, spaced apart legs 14 are pivotally attached to the base plate 12. As shown in FIGS. 1 and 2, the legs 14 each include a pivot 16 which is attached to a bracket 18 extending from the base plate 12.

The legs 14 each include a hollow segment 20 having an extension 22 slidable through an outward end thereof. The extension 22 includes a curved end 24 with a stabilizing foot 26 attached at an end thereof. The spaced apart legs 14 cooperatively form a base or platform for the device 10 during use.

With continuing reference to FIGS. 1-3, a resilient member 28 is attached to the base plate 12 and extends upwardly and downwardly therefrom. The resilient member 28 includes a coiled spring. A post 30 is attached to the resilient member 28. More specifically, the post 30 is attached to an upper portion of the spring 28. The post 30 supports a padded punching bag 32. The punching bag 32 can be comprised of a variety of materials known in the art in

order to provide the user a durable, padded bag 32 for which to punch, kick, etc. during training and exercising. For example, the punching bag 32 may be comprised of a durable outer cover, such as a fabric (nylon), plastic (e.g., vinyl) or leather, having a layer of foam or the like (e.g., solid foam padding) therein such that the punching bag 32 can be repeatedly struck while softening the blow to the user.

The user can position himself or herself between the legs 14 and punch, kick, or otherwise strike the punching bag 32. The resilient spring 28 causes the punching bag 32 and post 30 to deflect a certain angular amount from the normally vertical orientation while the punching bag 32 is struck. The resilient spring 28 also causes the post 30 and punching bag 32 to rebound towards the user in typical punching bag fashion. It will be appreciated by those skilled in the art that the device 10 in its extended in-use state is a few feet, typically less than six feet, tall to simulate an opponent and enable the user to easily punch, kick, and strike the punching bag 32.

With reference now to FIG. 6, the device 10 can be folded into a compact state, as illustrated, for storage or transportation purposes. The legs 14 are articulated such that they can be moved from their fully extended state, as illustrated in FIGS. 1-5, to a folded and compact state, as illustrated in FIG. 6. This is accomplished by lifting each leg 14 upwardly about the pivot 16 for movement from a generally horizontal position to a generally vertical position, as shown in FIG. 6. The extension 22 is slidably connected to the hollow segment 20, to allow the legs to be shortened during transport and storage. The stabilizing feet 26 are pivotally attached to the ends of the extensions 22 so that the stabilizing feet 26 can be positioned downwardly and the folded exercise device 10 supported thereon.

As seen in FIGS. 1-3 and 6-9, a resilient plastic housing 34 is located over the resilient member 28 and the base plate 12. The housing 34 includes an aperture 36 through which the post 30 passes. The housing 34 also covers a dampening resilient member 38 which is located between the base plate 12 and the resilient member 28. The dampening resilient member 38 is made of

an uncommon grade of rubber (approximately 20 to 30 durometer) and includes a central aperture 40 through which a portion of the resilient member 28 passes so that the dampening resilient member 38 is secured between the base plate 12 and the resilient member 28.

A threaded lower portion 42 of the resilient member 28 passes through the central aperture 40 of the resilient dampening member 38 and a central aperture 44 of the base plate 12 in order to secure the resilient member 28 to the base plate 12. Once the lower portion 42 passes through the central aperture 44 of the base plate 12 and extends downwardly from the base plate 12, the lower portion 42 is secured by a locking assembly 46 that includes a first stainless steel washer 48, 1/4 inch thick nylon resilient member 50, a second stainless steel washer 52, and a self-locking nut 54.

An upper portion 56 of the post 30 supports the padded punching bag 32. The punching bag 32 includes an internal cavity 58 which can telescopically accept the post 30 therein, such that the punching bag 32 can be pushed downwardly over the post 30. A positioning clamp 60, located on a lower portion of the punching bag 32, locks the bag 32 at the desired height of any range of individuals heights. The internal cavity 32 is formed by an aluminum tube 62 into which the post 30 can telescopically slide. The tube 62 is held in place by the foam of the punching bag 32 and by a washer and bolt assembly 64 located at the top of the punching bag 32. A retainer sleeve 66 is located between positioning clamp 60 and the punching bag 32. The retainer sleeve 66 and positioning clamp 60 surround the upper portion 56 of the post 30 and allow the height of the punching bag 32 to be adjusted. Tightening and loosening of the clamp 60 allows more or less of the post 30 to be slid into the tube 62 of the punching bag 32.

With reference to FIGS. 1-7, and 10-15, each of the legs 14 is locked into a first ground-engaging in-use extended position by means of a lock assembly 68 (e.g., a dual push pin assembly) located within each leg 14 that is operationally connected to bracket 18. Each lock assembly 68 includes a cylindrical post 70 connected to a bent flexible member 71 located within the

hollow segment 20. Each of the brackets 18 connected to the base plate 12 includes a pivot aperture 72 on each side of the bracket 18 (corresponding to a pivot aperture 74 on each side of the hollow segment 20), and a locking aperture 76 (corresponding to the cylindrical post 70 of the lock assembly 68 extending through an aperture 78 on each side of the hollow segment 20). When the hollow segment 20 of the leg 14 is positioned between the sides of the bracket 18 and the pivot apertures 72 of the bracket 18 aligned with the pivot apertures 74 of the hollow segment 20, a fastener (e.g., bolt, screw or the like) is inserted through the apertures 72, 74 to create the pivot 16 about which the leg 14 rotates. By pressing on both of the posts 76 of the locking assembly 68 until the posts 76 are no longer in contact with the locking apertures 78, the legs 14 are released so as to rotate about the pivot 16 of the bracket 18 to a second ground-engaging folded position (FIG. 6). Each bracket 18 includes a rubber stopper 80 against which the leg 14 rests when the leg 14 is in the extended in-use position. The lock assembly 68 holds the pivotal legs 14 in either of the first or second positions and releases the legs for moving between the first and second positions. Alternatively, an additional aperture (not shown) on bracket 18 would allow the post 70 of the lock assembly 68 to hold the legs 14 in the second ground-engaging folded position.

As outlined above, the extension 22 is slidably connected to the hollow segment 20, to allow the legs to be shortened during transport and storage. The extension 22 telescopically slides within the hollow segment 20 when the device 10 is being transported stored. Each telescoping extension 22 is therefore selectively movable between at least a retracted position and at least one extended position. FIGS. 1-7, and 12-14 illustrate that a lock assembly 82 (e.g., a single sided push pin assembly), located at an upper end 84 of the extension 22, engages a locking aperture 86 of the extension 22 and allows the extension 22 to be locked into various positions when the device is in use by means of a number of positioning apertures 88 located along a lower end 90 of the hollow segment 20 that hold the extension 22 in the retracted position and the extended positions. Each lock assembly 82 includes a cylindrical post 92 connected to a

bent flexible member (not shown) located within the extension 22. The post 92 extends through the locking aperture 86 of the extension 22. The lock assembly 82 holds the extension 22 in either of the retracted or at least one extended positions and releases the extension 22 for moving between the retracted and extended positions. When the extension 22 is being telescopically extended from within the hollow segment 20 to a first in-use position, the flexible member (not shown) will automatically move the post 92 to engage the first position aperture 88 the post 92 encounters after the post 92 has been released from the aperture 88 associated with the retracted position unless the user depresses the post 92 until the post 92 is aligned with a desired positioning aperture 88 associated with an extended position of the hollow segment 20.

The extension 22 further includes a solid steel shaft 94 within the extension 22 that provides additional mass/weight that acts to lower the center of gravity of the device 10, increasing the difficulty of knocking the device 10 over.

As seen in FIGS 16 and 17, the stabilizing foot 26 includes a rubber-type non-slip surface 96 attached to a contact side 98 of the stabilizing foot 26. Each foot 26 includes two brackets 100 where each bracket 100 includes a pivot aperture 102. A pivot aperture 104 is located on each side of a lower portion of the curved end 24 of the extension 22. When the curved end 24 is positioned between the brackets 100, and the pivot apertures 102, 104 aligned, a fastener (e.g., bolt, screw or the like) is inserted through the apertures 102, 104 to secure the extension 22 to the stabilizing foot 26.

The device 10, in its fully extended in-use state, may occupy a space of four to six feet in height and diameter. However, in the compact state, the device 10 is only two to three feet tall (preferably 34 inches), and approximately a foot in diameter (preferably 14 inches). It will be appreciated that these dimensions can be altered to suit the needs of the user. It will also be appreciated by those skilled in the art that the exercise device 10 of the present invention is not attached to walls, ceilings, or floors, as with prior punching exercise devices. The exercise device 10 of the present invention can be

extended into its in-use state, as shown in FIGS. 1-5, and placed in an open space in a room and used for training and exercise purposes. Thereafter, the exercise device 10 can be folded into its compact state, and inconspicuously stored in a corner of the room, a closet, etc. The size of the compact state of the exercise device 10 also allows it to be transported for use in other locations.

Figures 18-20 illustrate an alternative embodiment of the portable punching exercise device 110 otherwise identical to the device 10 described above, except that the structure and manner in which the device 110 is folded differs. The device 110 includes a base plate 112. A plurality, typically four, spaced apart legs 114 are pivotally attached to the base plate 112. The legs 114 each include a pivot 116 which is attached to a bracket 118 extending from the base plate 112.

With continuing reference to FIGS. 18-20, a resilient member 120 is attached to the base plate 112 and extends upwardly and downwardly therefrom. The resilient member 120 includes a coiled spring 122. A post 124 is attached to the resilient member 120. More specifically, the post 124 is attached to an upper portion of the spring 122 on one end and a punching bag (not shown) on the other.

The device 110 can be folded, in a manner similar to that described above with respect to device 10, for storage or transportation purposes. The legs 114 are articulated such that they can be moved from their fully extended state to a folded and compact state. This is accomplished by lifting each leg 114 upwardly about the pivot 116 for movement from a generally horizontal position to a generally vertical position.

A resilient plastic housing 128 is located over the resilient member 120 and the base plate 112. A portion of the housing 128 contours over the surface of the spring 122. A dampening resilient member 130 is located between the base plate 112 and the resilient member 120. The dampening resilient member 130 is made of an uncommon grade of rubber (approximately 20 to 30 durometer) and includes a central aperture 132 through which a portion of the

resilient member 120 passes so that the dampening resilient member 130 is secured between the base plate 112 and the resilient member 120.

Each of the legs 114 is locked into a first ground-engaging in-use extended position by means of a lock assembly 134 located on each leg 114 that is operationally connected to bracket 118. Each lock assembly 134 includes two cylindrical posts 136 with hemispherical tops extending from two opposite sides of each leg 114. Each of the brackets 118 connected to the base plate 112 includes a post locking apertures 138 on each side of the bracket 118 (corresponding to a cylindrical post 136 on each side of the leg 114).

When the user desires to lower the legs 114 from their storage position and move them into their in-use position, the user pushes the base plate 112 towards the spring 122 which is resiliently compressed by the movement. As the legs 114 are connected to the base plate 112 at the pivot 116, the legs 114 also move towards the spring 122. The bracket 118 is stationary. The user folds the legs 114 about the pivot 116 towards the bracket 118 until the legs 114 are in their in-use position. Each bracket 118 includes a rubber stopper 140 against which the leg 114 rests when the leg 114 is in the extended in-use position. Pressure by the user which compresses the spring 122 is decreased so that the resilient spring 122 presses the base plate 112 and legs 114 away from the spring 122. As the posts 136 and post locking apertures 138 are aligned when the legs 114 are in their in-use position, the posts 136 slide into their respective post locking apertures 138.

The legs 114 may be released from their in-use position by pressing the base plate 112 towards the spring 122. This compresses the resilient spring 122 as the base plate 112 and legs 114 move towards the spring 122. When the posts 136 are clear of the locking apertures 138, the legs 114 may be folded about the pivot 116 to their storage positions.

The above-described embodiments of the present invention are illustrative only and not limiting. It will thus be apparent to those skilled in the art that various changes and modifications may be made without departing from this invention in its broader aspects. Therefore, the appended claims encompass

all such changes and modifications as falling within the true spirit and scope of this invention.